

Interwoven TeamSite* 5.5 Content Management Solution Sizing Study

Executive Summary

This *Interwoven TeamSite* 5.5 Content Management Solution Sizing Study* helps key decision-makers determine which TeamSite 5.5 Content Management Solution configuration is most appropriate for their particular content management system implementation. The solution set described here has been tested by Intel® Solution Services.

Intel Solution Services and Intel® Solution Centers assist companies in keeping pace with the complex demands of the new Internet economy. By working with Intel, customers have access to world-class engineering support and leading edge technology building blocks. This *Sizing Study* describes the results of Intel Solution Services' performance testing for the featured TeamSite 5.5 Content Management Solution configuration, allowing solution implementers to make informed choices about their deployment needs.

Overview

This *Sizing Study* provides an overview of a capacity analysis on the Interwoven TeamSite 5.5 Content Management Solution, and offers performance information derived from the featured configuration. Intel Solution Services and Intel Solution Centers have developed and tested an enterprise configuration for the TeamSite 5.5 Content Management Solution to meet a customer's needs.

According to Interwoven, the solution set represents "a flexible, scalable, standards-based platform for creating, managing, and deploying the enterprise-class business-critical Web content" (source: www.interwoven.com). The Interwoven TeamSite 5.5 Content Management Solution (Figure 1) is based on an enterprise architecture.

TeamSite Content Management Solution is composed of the TeamSite server and device driver, the TeamSite backing store of files and metadata, a suite of command-line tools, TeamSite CGI, proxy servers for access through the TeamSite browser-based GUI, and file system mounts for access through the file system interface. The configuration is based on a Microsoft Windows* 2000 Advanced Server with Service Pack 2 platform, and Intel® Pentium® III Xeon™ processor-based high-volume servers. However, the testing results presented here can be generalized to Intel architecture-based systems from other vendors such as Compaq, Dell, IBM and Hewlett-Packard.

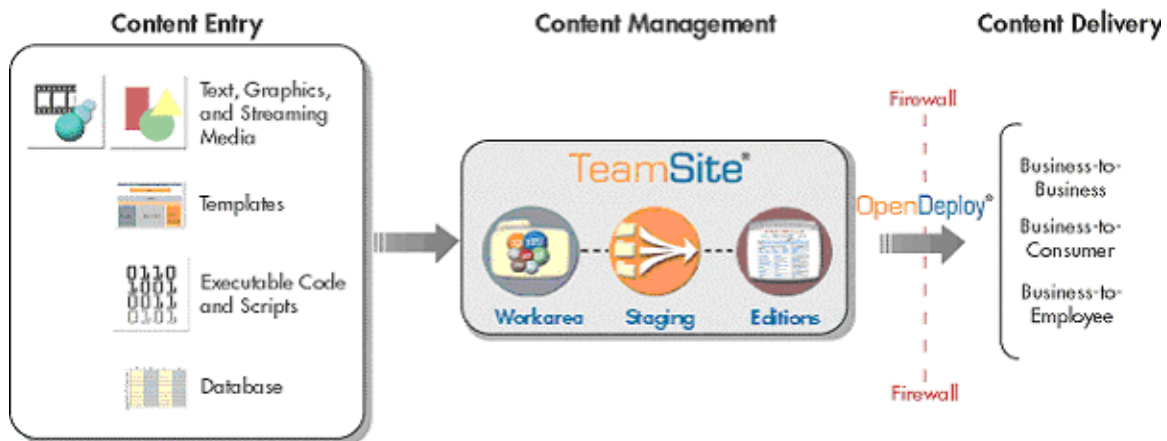


Figure 1: TeamSite* Content Management System (Source: www.interwoven.com)

Choosing a Configuration

The approach to implementing the Interwoven TeamSite 5.5 Content Management Solution was to follow Interwoven's Best Known Methods for configuring a high-volume content management system. Tests were conducted under simulated real-world conditions. The capacity of the test configuration was measured using the following key metrics:

- Number of concurrent users for a response time threshold
- The average response time for a given number of concurrent users

Enterprise Content Management Configuration

For the Enterprise Content Management Configuration (Figure 2), the TeamSite Server was installed on a 900 MHz Intel Pentium III Xeon processor-based server, and the backing store was installed on a 1 TB EMC Symmetrix* logical volume over the fiber channel.

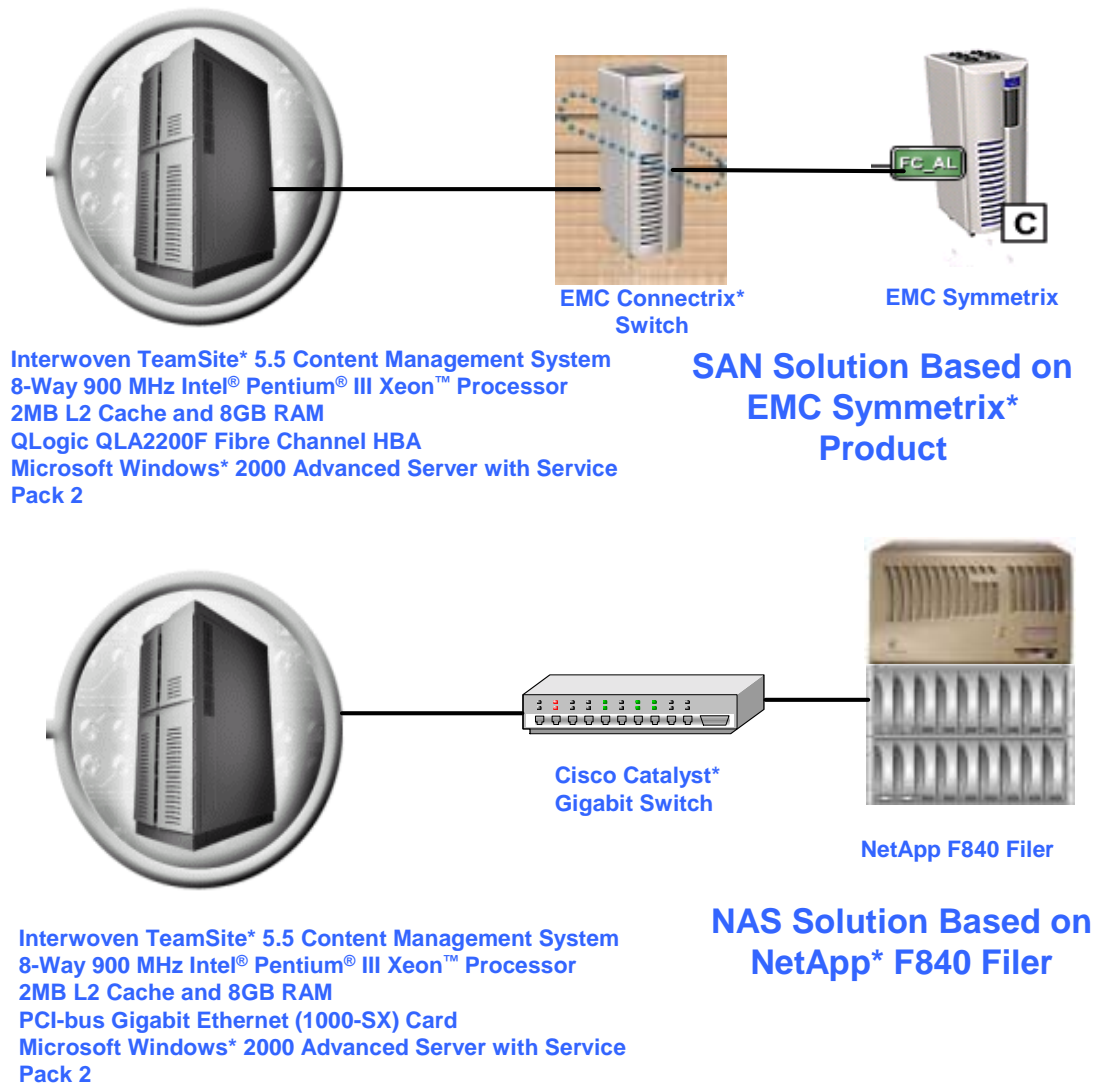


Figure 2: Interwoven TeamSite* 5.5 Server Enterprise Content Management Configuration Environment Diagram

The tested configuration uses a SAN solution based on the EMC Symmetrix product. The testing results presented here can be generalized to similar SAN/NAS storage solutions from other vendors, such as Network Appliance, Compaq, Dell, and Hewlett-Packard. One requirement of any such solution is the ability to support 400 transactions/second or higher.

Evaluating Your Needs

When evaluating the configuration described, consider your needs by asking yourself the following questions:

- How many users and how much content is expected in the initial implementation?
- What are the expected growth rates for both users and content? Do I need to plan for increased future capacity?

The solution configuration outlined in this guide has been tested to offer a thoughtful balance of price, complexity, and performance. While statistical performance data can be crucial in comparing configurations, also keep in mind the real-world intended usage.

Comparative Capacity Measurements

Figure 3 depicts the optimization results (1.3x to 1.7x over baseline¹) accomplished by Interwoven after implementing Intel Solution Services' recommendations derived through thorough application-level performance analysis under stress testing. The results presented below are for a given concurrent user load (400 users) on an 8-way 700 MHz Intel Pentium III Xeon processor-based server with 2MB L2 cache and 8GB of main memory.

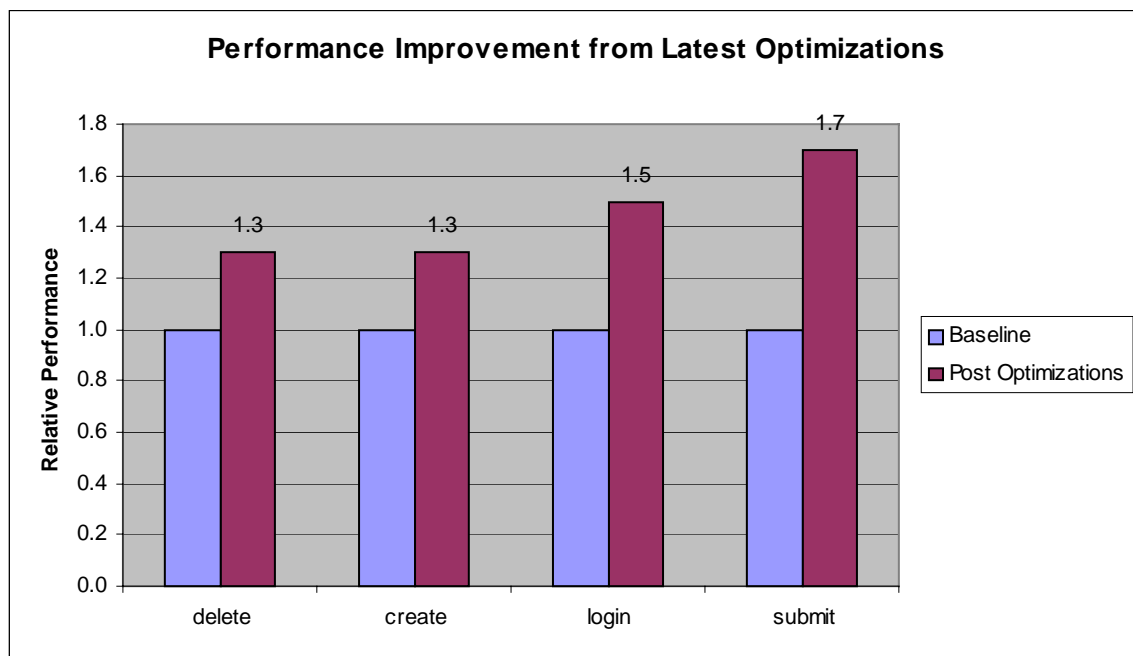


Figure 3: Performance Enhancement with Intel® Solution Services Recommended Optimizations

¹ The baseline was measured before Interwoven implemented Intel Solution Services recommendations derived through thorough application level performance analysis under stress testing.

Figure 4 depicts the average response time in seconds for the four heaviest operations in our workload running 2000 concurrent users on an 8-way 900 MHz Intel Pentium III Xeon processor-based server. This server price-to-performance configuration is recommended for the peak of 2000 concurrent users.

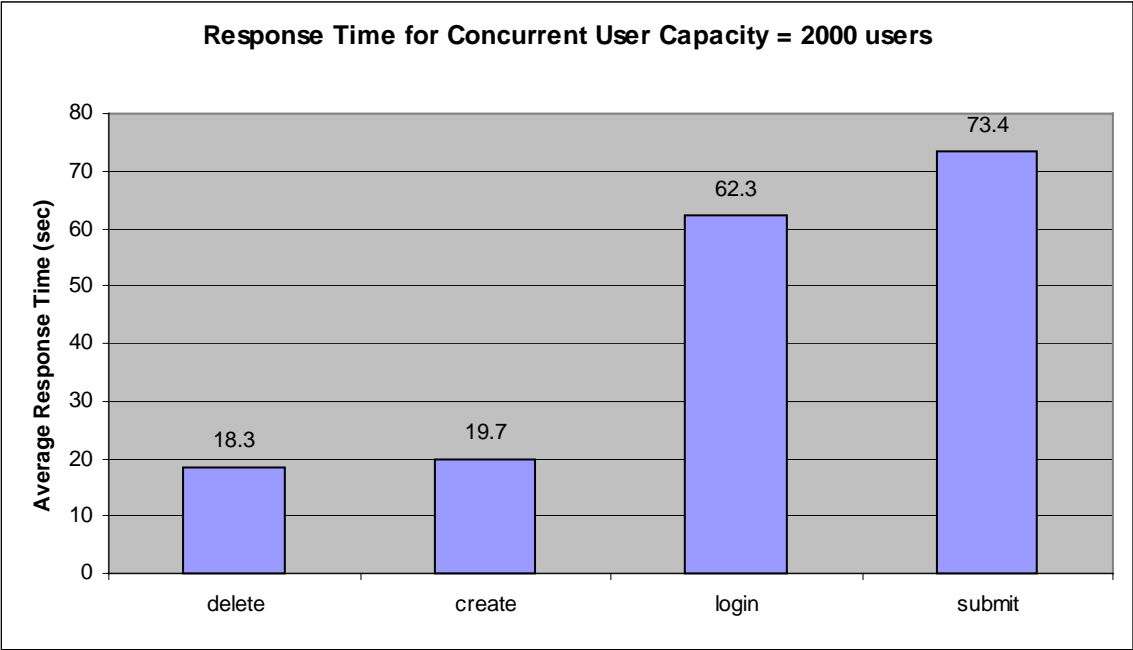


Figure 4: Concurrent User Scalability on Intel® Pentium® III Xeon™ processor-based servers

Figure 5 depicts the relative transaction response time for a given concurrent user load (400 users) on a 2-way, 4-way and 8-way 900 MHz Intel Pentium III Xeon processor-based servers:

- All four major operations in Interwoven TeamSite 5.5 Content Management Solution – Login, Create, Submit, Delete – take advantage of increased SMP and show performance improvement going from a 2-CPU to an 8-CPU server identically configured.
- On an 8-CPU server, the Login, Create, Submit, and Delete operations show performance improvement of 3.9x, 4.7x, 5.4x, and 5.3x, respectively, compared to the baseline on a 2-CPU server.

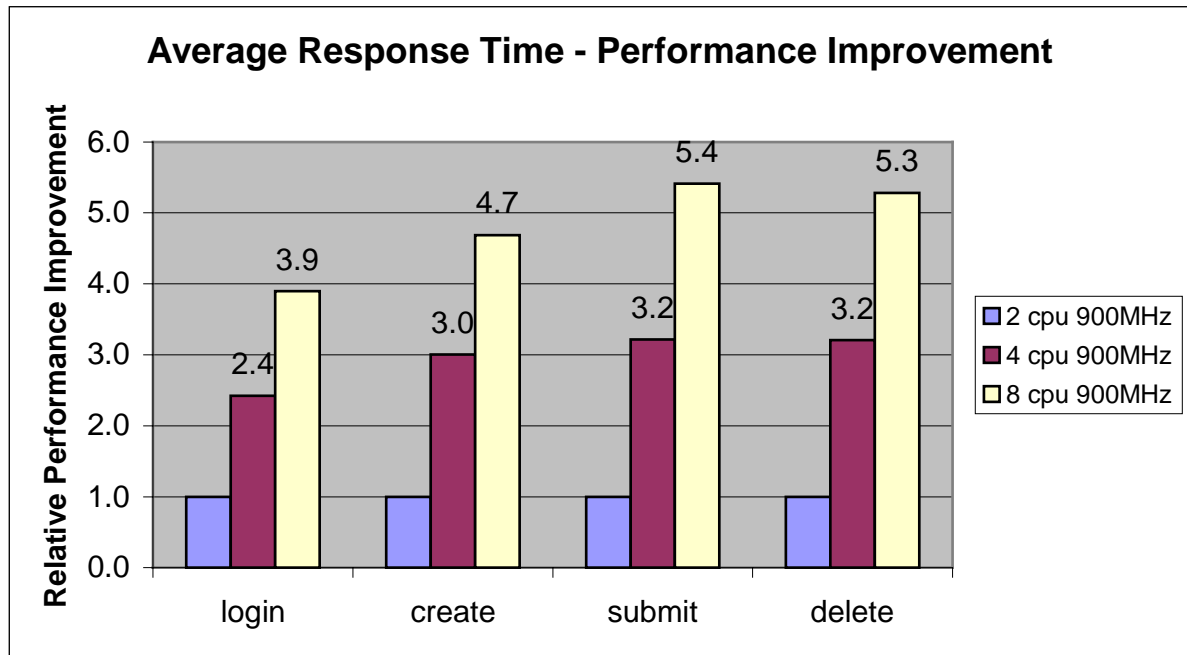


Figure 5: Transaction Response Time Performance Improvement with Increasing Server SMP

Performance Testing Methodology

Testing Approach

Intel Solution Services tested the configuration by simulating actual user behavior. These virtual users were generated using Mercury Interactive LoadRunner*, running on a client wall of 2-way 700 MHz Intel Pentium III Xeon processor-based servers with 2 MB cache and 512 MB of main memory, connected to the solution via a switched network.

Testing emphasis was on the sustained concurrent users and server response time. Simulations were run by incrementing the number of concurrent virtual users accessing the TeamSite 5.5 Content Management Solution.

Scenario Definition

User scenario is represented by the tasks defined in the LoadRunner script. Changes in the user scenario have a strong effect on the overall performance of the TeamSite 5.5 Content Management Solution. The scenario below, representing the typical content management user, was followed:

1. Users' Login
2. Change to Workarea View
3. Browse a Branch
4. Browse all Workareas
5. Browse User's Workarea
6. Browse User's Directory
7. Create a File
8. Submit a File
9. Delete a File
10. Logout

User Profile

The user profile developed was intended to stress the Interwoven TeamSite 5.5 Content Management Solution enterprise configuration. The results presented in this report used one of the following two profiles:

- Aggressive/Heavy Load: All the users followed the above scenario, including 100 percent of the users performing the Submit File operation.
- Typical Load: All the users followed the above scenario with the exception of Submit File operation that was performed by 10 percent of the users.

The Results of Optimization (Figure 3) and the Relative Transaction Response Time (Figure 5) used the Aggressive Load. The Concurrent User Capacity (Figure 4) used the Typical Load to give an accurate representation of the capacity of concurrent users that can be supported on a given server configuration.

An important consideration is that a virtual user does not correspond one-to-one with an actual user. The virtual-user profile is intended to emulate an actual user performing content management tasks. However, this type of controlled testing tends to introduce more stress on the solution than would be encountered in a production environment.

Between each test, the systems were reset to ensure a clean and consistent starting point.

Test Parameters

Parameter	Description	Setting
Delay Time	The average idle time before simulated users perform a task.	80 seconds
Ramp-Up Time	The pace at which users were added during the test.	0.85 users/second
Execution Time	The time required for the test to run.	Until Scenario Completion
Branch	The number of branches in TeamSite Repository	20
Workarea	The number of user workareas in TeamSite Repository	50
Directory	The number of directories in each Workarea	50
File Size	The size of each file in a Directory	4K

Table 1: Test Parameters

Hardware Tested

Server System: 8-way 900 MHz Intel Pentium III Xeon processor-based server

Processor speed: 900 MHz
L2 Cache Size: 2 MB
Memory Size: 8 GB

The 2-CPU and 4-CPU tests results presented in this report were also measured on this 8-way 900 MHz server by disabling six and four of the eight processors, respectively.

Storage System: EMC Symmetrix SAN solution with a postmark performance rating of 961 transactions per second. Thirty 35-GB Meta volumes were arranged into a spanned logical volume of 1 TB in Microsoft Windows. Each Meta volume was striped across four drives.

Conclusions and Recommendations

The performance testing of the Interwoven TeamSite 5.5 Content Management Solution enterprise configuration led to the following conclusions:

- Interwoven TeamSite 5.5 Content Management Solution can support a peak of 2000 concurrent users within 70-second response time running on an 8-way 900 MHz Intel Pentium III Xeon processor-based server.
- The number of processors, processor speed and processor L2 cache are critical to the performance of Interwoven TeamSite 5.5 Content Management Solution.

The enterprise configuration of the Interwoven TeamSite 5.5 Content Management Solution represents a flexible and scalable platform for creating, managing, and deploying business-critical Web content.

For More Information

For a detailed discussion of the metrics and procedures used in testing the Interwoven TeamSite 5.5 Content Management Solution enterprise configuration, and detailed statistical data, please contact your Intel Solution Services representative. Please visit us on the web at www.intel.com/internet-services/intelsolutionservices or send e-mail to solution-services-questions@intel.com

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